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NEW RESEARCH IN ECONOMIC EDUCATION[†]

Research in Economic Education: Five New Initiatives

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Research is essential for improvement in teaching and learning economics. William E. Becker et al. (1991) called for new research on the relative merits of multiple-choice and essay tests, on the lasting effects of course work in economics, and on the effects of instructors, instructional techniques, and new technologies on student learning. To respond to the call, the Committee on Economic Education (CEE) of the American Economic Association recruited Robin Bartlett, William Becker, W. Lee Hansen, Peter Kennedy, and the authors to organize a conference that would jump-start new research projects.

The organizers chose three conference goals: identifying research priorities, recruiting new economists to economic education research, and building teams to undertake identified priorities. They recruited 21 economists to participate,¹

provided them with a list of potential research questions, and asked them which questions were most important and which they were willing to work on. With survey results in hand, the organizers divided participants into five teams corresponding to the following five topics: Teaching Methods and Incentives for College-Level Economics Instruction, Ph.D. Education in Economics in the United States, Improving the Assessment of Student Learning in College Economics Courses, Long-Term Effects of Learning Economics, and Efficiency in the Use of Technology in Economic Education.

At the conference, participants discussed briefing papers prepared for each topic, worked on project design and funding issues, and began writing proposals. Herein, we describe our research priorities and our progress in developing research plans and securing financial support.

I. Teaching Methods and Incentives for College-Level Economics Instruction

Education specialists agree that instructors should use active learning (Charles C. Bonwell and James A. Eison, 1991). Active learning may be particularly important in economic education where the overarching goal is to help students "think like economists" (Siegfried et al., 1991). Active learning helps students think like economists by providing structured opportunities where they apply economic ideas to answer questions and solve problems. Despite its potential, active learning is seldom used in economics. Chalk-and-talk is the dominant pedagogy in all courses at all types of undergraduate institutions (Becker and Watts, 2001).

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¹ In addition to the authors, participants in the Research Projects Conference were: Rajshree Agarwal, University of Central Florida; Sam Allgood, University of Nebraska-Lincoln; Robin L. Bartlett, Denison University; William Becker, Indiana University; Betty Blecha, San Francisco State University; Bill Bosshardt, Florida Atlantic University; Myles G. Boylan, National Science Foundation; Joseph I. Daniel, University of Delaware; T. Aldrich Finegan, Vanderbilt University; W. Lee Hansen, University of Wisconsin; Peter Kennedy, Simon Fraser University; Mark Maier, Glendale Community College; KimMarie McGold-

rick, University of Richmond; Wendy Stock, Montana State University; John Taylor, Stanford University; and Wilbert van der Klaauw, University of North Carolina.

For the past 25 years, the CEE has conducted a Teacher Training Program that has helped several hundred college-level economics instructors improve their teaching (Salemi, 2000). While originally quite broad, the program curriculum now focuses on active learning. Participants rate workshops highly and report lasting effects on their teaching.

Economic theory predicts that teachers will learn new teaching methods when the benefits of doing so outweigh the costs. A program that encourages instructors to adopt new teaching methods should consider the incentives faced by teachers. Using survey data, Cynthia L. Harter et al. (2000) find that teaching and research are weighted equally in tenure and raise decisions and that, on average, respondents allocate 52 percent of their time to teaching and only 30 percent to research. While this finding suggests that teaching is important to instructors, it does not imply that they are willing to adopt new techniques.

At the conference, the team focused on two questions: (i) What strategies are effective for teaching college-level economics instructors about alternatives to the lecture? (ii) What incentives would induce instructors to adopt new pedagogies and improve their teaching? The team considered several ways to answer the questions. It could study what other disciplines have done to promote teaching and the acquisition of teaching skills. It could pair institutions that are starting teaching-enhancement programs with similar institutions that are not. It could survey college instructors to determine who does and who does not use alternatives to chalk-and-talk and determine what is different about the innovators.

The team decided to begin with a fourth alternative: extending the Teacher Training Program. The National Science Foundation recently expanded its Course, Curriculum, and Laboratory Improvement Program to include social sciences. The program includes a track for projects that enable faculty to improve their teaching effectiveness through new educational practices. With assistance from team members, Salemi and Walstad prepared a proposal, obtained an endorsement of it from the CEE, and submitted it to the Foundation.

The proposed project has four components: a series of residential workshops that will disseminate

best teaching practices and materials, the establishment of a "Certificate of Achievement" for college-level economics teachers, additions to the *Journal of Economic Education (JEE)* web site that will permit economics instructors to share educational materials, and creation of a multiplier effect through follow-up activities where workshop participants share project benefits with other economics instructors. If funded, the project will provide valuable instruction to hundreds of economics instructors and incentives for participants to revise their teaching practices on the basis of what they learn at the workshops.

II. Ph.D. Education in Economics in the United States

Although the content of most economics Ph.D. programs is similar, the training process differs across programs. The Ph.D. education team proposes a study that relates structural characteristics of programs to the success of their students. The research will focus on the process (course number and requirements) rather than on the substance (course content) of training.

Several issues motivate the research. Rising enrollment in economics courses and a large number of impending faculty retirements imply that demand for Ph.D. economists will increase over the next decade. At the same time, enrollment in and graduation from Ph.D. programs in economics is declining, particularly among U.S. citizens. These demand and supply factors combine to predict a shortage of Ph.D. economists at current compensation levels.

The annual quantity supplied of new Ph.D. economists rose steadily from World War II through the late 1960's, peaking at around 950 in 1973 and then stabilizing around 900 for the next two decades (Frank A. Scott and Jeffrey D. Anstine, 1997). Modest growth generated new peaks near 1,000 degrees in the mid-1990's. Despite recent growth, the supply of new doctorates in economics is expected to decline sharply in the next few years, following the 18-percent decline in the number of first-year graduate students that occurred from 1992–1993 to 1996–1997. The proportion of degrees awarded to Americans has declined from 67 percent in 1977 to 43 percent in 1996. The annual quantity

supplied of new American Ph.D. economists could fall below 300 by 2005.

One goal of the research is to document recent trends in the number of doctorates awarded in economics and to determine which Ph.D. programs are shrinking. Information on the number, tier-distribution, and nationality-mix of economics doctorates could influence retention of retirement-age faculty or the timing of new-doctorate hires.

A second goal of the research is to study factors that influence the supply of economists. To date, little is known about why the number of Americans enrolling in economics Ph.D. programs has fallen. Has the number of applications from U.S. citizens declined? Has the quality of applicants' credentials declined? Have admission standards been raised? Are admitted applicants less likely to matriculate than they once were? What do admitted applicants do if they forgo graduate education in economics?

A third goal of the research is to study whether and how differences in the structure of graduate programs can account for differences in program outcomes. The project will document differences among programs in entrance, course, examination, seminar-attendance, and paper-presentation requirements, program size, advisor/mentor relationships, field-course offerings, program specializations, and financial-aid support. It will survey Ph.D. graduates in 2001–2002 to document outcomes such as type of job obtained and time-to-degree. It will use resulting data to look for correlations between program characteristics and outputs.

III. Improving the Assessment of Student Learning in College Economics Courses

The assessment team proposes a four-part project: (i) a national survey of assessment measures and techniques; (ii) two new assessment instruments; (iii) two web sites, one for the publication of assessment measures that are peer-reviewed and the other for discussion and information-sharing; and (iv) a series of workshops to improve assessment practices.

Despite complaints about poor assessment methods, few studies document how Principles

of Economics instructors assess student performance. As a remedy, the team proposes to ask Principles course instructors to submit assessment materials from a recently completed course. The submitted tests, problem sets, and exercises would then be evaluated and classified according to a cognitive-learning taxonomy. The compilation will provide objective evidence on the current level of assessment and a baseline against which progress can be measured.

The project will develop two new assessment instruments. The first will be a revision of the *Test of Understanding of College Economics*, a fixed-response test with a long history in economic-education research. The revision will assess student understanding at all cognitive levels and will include more "real-world" applications. To support evaluation of instructional technologies that aim to increase learning at higher cognitive levels, the project will develop a new constructed-response test. This second test will include questions that provide students with a scenario, such as a short clipping from a newspaper, and ask them to interpret and evaluate the clipping using economic concepts. The project will provide a detailed key for grading the constructed-response test and will norm both tests nationally.

Teachers get little recognition for creating course tests and materials. As a remedy, the project will initiate an electronic section of the *JEE* that showcases such material. Economics instructors will be able to submit their assessment instruments to the *JEE* for peer review. Submissions will include an answer key, grading instructions, and other useful information. The website will provide easy access to high-quality assessment materials for teaching economics and will recognize the creators of those materials. The project will create a second web site to facilitate discussion on assessment issues and exchange of assessment materials.

The project will also provide a series of workshops to help instructors improve their assessment skills. Workshops will help faculty develop tests and course assignments that assess understanding at higher cognitive levels and use these measures in their research. Participants will submit their tests, problem sets, and paper assignments. Staff will evaluate the assessment

materials, suggest revisions, and encourage participants to submit their materials to the *JEE*.

IV. Long-Term Effects of Learning Economics

While many supporters of economic education argue that economics prepares people to make better decisions as consumers, workers, savers, investors, and voters, there is very little hard evidence to document these claims (Watts, 2000). The same charge could be leveled at other academic disciplines, but it is a more telling complaint in economics which, according to Alfred Marshall, deals with "the ordinary business of life." Whether the economics taught in colleges and universities today deals with the ordinary business of life is open to question. Some doubters complain that economics has become too theoretical, mathematical, and abstract to be of practical use. Others point out that agents in economic models make optimal decisions whether or not they have studied economics.

The project goal is to learn whether studying economics has long-term effects. Project findings could affect economics course content, program requirements, and course demand. They should interest prospective employers of economics majors, prospective economics students, and decision-makers in other disciplines who do or might require their students to study economics.

A major part of the project is the creation of a new database. Some existing databases contain information on both college course work and long-term outcomes such as career choices and earnings. The new database will include four kinds of information that are essential for evaluating long-term effects of economics instruction and are not available in existing databases. First, it will contain detailed information on each subject's course work in economics. Each record will include age, class standing, grade point average, and previous course work in economics and related areas. Second, the database will include information about course instructors, such as whether they were regular faculty, graduate students, or adjunct instructors. Third, it will include data describing subjects' later-life attitudes on a variety of economic and public-policy issues. Fourth, it will include characterizations of subjects' responses

to questions such as: "What did you learn in economics courses that you used later in life?" and "Which economics courses most affected your decisions as a consumer, worker, and voter?"

To permit comparison, project-survey questions on labor- and financial-market outcomes will closely follow the wording of counterpart items in existing surveys. To look for trends, the project will draw subjects from three cohorts: those entering college classes of 1972, 1982, and 1992.

V. Efficiency in the Use of Technology in Economic Education

Many economics instructors now use electronic technology in teaching. Assessments of computer-aided instruction in the 1960's and 1970's found that students and teachers enjoyed using new technology, but students did not learn more or less economics by doing so. Evaluation of the costs and benefits of electronic technologies has not kept pace with recent changes in technology. Although there is technology for every part of the economics curriculum (William L. Goffe and Robert P. Parks, 1997), there is little evidence on its learning- and cost-effectiveness.

The goal of the project is to determine whether human and technology resources can be deployed in economic education so that more can be learned in less or the same amount of teacher and student time. The project will ask economics teachers who make extensive use of educational technology to complete weekly web-based surveys. For each survey, participants will account for the time they spent on teaching with a two-way classification system: by teaching activities (lecture, grading, discussion, answering questions) and by technologies used (blackboard, presentation software, e-mail, web, telephone). The project will use the resulting data to compute time-costs of various teaching technologies.

The project will measure student outcomes with a two-part strategy. First, the team will ask participating instructors how they believe their use of technology improves education and will develop an assessment instrument based on instructor beliefs. For example, if instructors believe that students benefit by receiving quick

answers to e-mail questions, the instrument would ask students if they benefitted in that way. Second, the team will pre- and posttest students using a reliable and valid test.

The project will also collect data on student aptitude and learning style. The pretest and aptitude data will be used to measure initial understanding of economics concepts. Posttest data will be used to measure learning. Data on learning styles will be used to determine whether technology works better for some kinds of learners than for others.

The team will use the collected data to fit a production function for student learning in which the dependent variable is a measure of student performance and the independent variables are measures of student and faculty characteristics, including measures of student aptitude and the time devoted by teachers and students to various activities in the course. The research design will permit the team to estimate the productivity of the time teachers devote to technology-based activities and whether that productivity varies over output measures.

VI. Conclusions

The new research initiatives described in this paper can shed light on many important questions about economic education. One set of questions concerns what works in the classroom. The assessment project will develop test instruments that permit examination of widespread claims that students learn better when instructors use active learning instead of lecture. The technology project can tell us whether use of electronic technologies either increases learning or lowers the cost of instruction. The lasting-effects project can determine whether students who study economics "think like economists" years after their course work is over and may suggest strategies for increasing the long-term effects of economic education.

A second set of questions concerns how to induce desired changes in teaching. By establishing a certificate of achievement in economic education, the teaching-methods project will permit researchers to study whether recipients of the certificate are rewarded. By initiating a new section of the *JEE*, the assessment project will help us learn whether instructors respond to

a publication opportunity by improving the quality of their tests and assessment practices. By expanding the Teacher Training Program, the teaching-methods project will help us understand whether providing low-cost education to teachers induces them to improve their teaching.

A third set of questions concerns training of Ph.D. economists. The graduate-training project can help determine the causes and consequences of the coming decline in new economics Ph.D. recipients. It can also lead to a better understanding of what educational practices make graduate programs work well.

We are optimistic about completing the new research agenda. Our team-building approach and recruitment efforts should provide the structure and resources required to undertake the described initiatives and obtain answers to the important questions posed in the agenda. The answers should inform decision-makers in important ways.

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